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Prediction of Burnout Among Caregivers in Elderly Care Centers Based on Psychological Capital and Empathy: The Mediating Role of Caregiving Burden

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A B S T R A C T

The aim of the present study was to examine the fit of a structural model for predicting burnout among caregivers in elderly care centers based on psychological capital and empathy, with the mediating role of caregiving burden. The statistical population consisted of all caregivers employed in elderly care centers located in the city of Karaj in 2025 who had more than five months of experience in caring for older adults. A non-random, voluntary sampling method was used, and due to adequate access to the target population, a relatively large sample size (N = 200) was selected to ensure greater precision in structural equation modeling analyses. In addition, according to Kline (2011), in structural equation modeling, the sample size should be at least five to ten times the number of observed variables. The research method was correlational using structural equation modeling. Data were collected using the Maslach Burnout Inventory (Maslach, 1985), the Psychological Capital Questionnaire developed by Luthans et al. (2007), the Empathy Quotient Questionnaire by Baron-Cohen (2004), and the Caregiver Burden Questionnaire by Novak and Guest (1989). Data analysis was conducted using the structural equation modeling (SEM) statistical approach. The results indicated that the indirect path coefficient between psychological capital and burnout (β = −0.238, p = 0.010), on the one hand, and the indirect path coefficient between empathy and burnout (β = −0.100, p = 0.003), on the other hand, were both negative and statistically significant. These findings indicate that caregiving burden significantly and negatively mediates the relationship between psychological capital and empathy with burnout among caregivers in elderly care centers.

Keywords: *burnout, caregivers, older adults, psychological capital, empathy, caregiving burden.*

1. Introduction

The rapid growth of the older adult population has transformed caregiving into one of the most demanding roles within contemporary health and social care systems. Globally, population aging has been accompanied by a sharp increase in chronic diseases, functional impairments, and long-term care needs, placing sustained psychological and emotional demands on both formal and informal caregivers (World Health, 2018). Elderly care centers, in particular, have become complex work environments in which caregivers must manage physical care tasks, emotional labor, ethical responsibilities, and interpersonal relationships with older adults and their families. These cumulative demands substantially increase caregivers' vulnerability to occupational burnout, a syndrome characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment (Ahmadi et al., 2024; Jain, 2024). Burnout among caregivers is not merely an individual psychological issue; it has been associated with reduced quality of care, higher turnover rates, and adverse outcomes for older adults, including neglect and diminished well-being (Rangriz & Mousavi, 2014; Sun et al., 2024).

Caregiving in elderly care centers differs from many other health professions due to its prolonged exposure to dependency, cognitive decline, and end-of-life issues. Studies have shown that caregivers of older adults often experience persistent psychological stress, emotional fatigue, and feelings of helplessness, particularly when caring for individuals with severe functional limitations or neurodegenerative conditions (Abbasi Asl et al., 2025; Guo & Shi, 2024). In Iran and other developing contexts, these challenges are compounded by limited institutional resources, high workloads, and cultural expectations surrounding caregiving responsibilities, further increasing the risk of burnout (Aghili et al., 2021; Sadeghi et al., 2024). Consequently, identifying psychological resources and protective factors that can buffer caregivers against burnout has become a central concern in gerontological and occupational health research.

One of the most influential constructs proposed as a protective psychological resource is psychological capital. Rooted in positive organizational psychology, psychological capital refers to an individual's positive psychological state, comprising self-efficacy, hope, resilience, and optimism (Lutthans et al., 2007). Unlike stable personality traits, psychological capital is considered malleable and developable, making it a particularly valuable target for intervention. Empirical evidence consistently demonstrates that higher psychological capital is associated with lower levels of stress, anxiety, and burnout across a wide range of caregiving and health professions (Rezaei et al., 2021; Zhou et al., 2018). Recent studies have extended these findings to caregivers of older adults, showing that psychological capital enhances coping capacity, promotes adaptive emotion regulation, and fosters a sense of meaning in caregiving roles (Kukihara et al., 2024; Sun, 2025).

Within elderly care settings, psychological capital appears to play a crucial role in sustaining caregivers' motivation and psychological well-being in the face of chronic stressors. Self-efficacy enables caregivers to feel competent in managing complex care tasks, hope facilitates goal-directed thinking despite adversity, resilience supports recovery from emotional setbacks, and optimism encourages positive expectations about caregiving outcomes (Liu et al., 2024; Mikaeili et al., 2023). Studies among nurses and professional caregivers have shown that psychological capital not only directly reduces burnout but also indirectly influences it through enhancing job satisfaction, emotional intelligence, and psychological empowerment (Şenol Çelik et al., 2024; Yazdanparast et al., 2024). These findings suggest that psychological capital functions as a foundational psychological asset that shapes how caregivers perceive and respond to occupational stressors.

Another construct increasingly recognized as central to caregiving effectiveness and well-being is empathy. Empathy involves the capacity to understand and share the emotional states of others and includes both cognitive and affective components (Baron-Cohen et al., 2003; Konrath et al., 2018). In elderly care, empathy is essential for building trust, responding sensitively to older adults' needs, and providing person-centered care. High levels of empathy have been linked to improved care quality, greater caregiver satisfaction, and enhanced therapeutic relationships (Duarte et al., 2016; Serrada-Tejeda et al., 2025). However, empathy also entails emotional involvement, which may expose caregivers to emotional contagion, compassion fatigue, and psychological depletion when adequate coping resources are lacking (Shen et al., 2024; Yang et al., 2025).

The relationship between empathy and burnout is therefore complex and potentially bidirectional. Some studies indicate that empathy serves as a protective factor, reducing depersonalization and fostering a sense of purpose in caregiving roles (Kharidaratiq & Zeynali, 2019; Zavar & Rezvani, 2018). Other research suggests that excessive

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empathic engagement, particularly emotional empathy, may intensify emotional exhaustion and contribute to burnout if caregivers lack sufficient psychological or organizational support (Shen et al., 2024; Yang et al., 2025). This dual role of empathy underscores the importance of examining contextual and mediating factors that determine whether empathy functions as a resource or a risk in caregiving environments.

One such critical factor is caregiver burden. Caregiver burden refers to the perceived physical, emotional, social, and developmental strain associated with caregiving responsibilities (Aghili et al., 2021; Jain, 2024). In elderly care centers, caregiver burden arises from high patient dependency, time pressure, physical demands, role conflict, and emotional involvement with older adults' suffering. Research consistently shows that higher caregiver burden is strongly associated with increased burnout, psychological distress, and reduced quality of life among caregivers (Chen et al., 2024; Sadeghi et al., 2024). Importantly, caregiver burden has been identified as a key mechanism through which individual and organizational factors influence caregiver outcomes.

Recent studies suggest that psychological capital and empathy may exert their effects on burnout partially through caregiver burden. Psychological capital has been shown to reduce perceived burden by enhancing coping strategies, increasing perceived control, and promoting adaptive appraisal of caregiving demands (Kiani et al., 2022; Liu et al., 2025). Similarly, empathy may influence how caregivers interpret and emotionally respond to caregiving challenges, thereby shaping their experience of burden (Serrada-Tejeda et al., 2025; Sun et al., 2024). When empathy is balanced with psychological resilience and empowerment, it may reduce burden by facilitating meaningful connections and emotional regulation; when unregulated, it may amplify emotional burden and accelerate burnout (Shen et al., 2024; Yang et al., 2024).

The mediating role of caregiver burden has gained increasing empirical support across diverse caregiving contexts. Studies on caregivers of patients with Alzheimer's disease, stroke, and chronic mental disorders demonstrate that psychological resources such as resilience, empowerment, and psychological capital indirectly reduce burnout by alleviating caregiver burden (Chen et al., 2024; Kukihara et al., 2024; Liu et al., 2025). Interventions aimed at enhancing empowerment and psychological capital have been shown to reduce burden and improve caregivers' emotional well-being (Hjazeen et al., 2024; Yang et al., 2024). Despite this growing body of evidence, few studies have simultaneously examined psychological capital, empathy, and caregiver burden within a unified structural framework, particularly among caregivers working in elderly care centers.

In addition, much of the existing literature has focused on nurses or family caregivers, with relatively limited attention to professional caregivers in institutional elderly care settings. Professional caregivers often face unique stressors, including shift work, staffing shortages, ethical dilemmas, and prolonged exposure to residents' decline, which may differentially shape the relationships among psychological capital, empathy, burden, and burnout (Ahmadi et al., 2024; Cangelosi et al., 2025). Moreover, cultural context plays a significant role in caregiving experiences. In collectivist societies, caregiving is often morally valued but insufficiently supported, potentially intensifying caregiver burden and emotional strain (Abbasi Asl et al., 2025; Bahari et al., 2017). Understanding these dynamics within specific cultural and occupational contexts is essential for developing effective, context-sensitive interventions.

From a theoretical perspective, integrating psychological capital and empathy within a stress–process framework highlights the interplay between internal resources and caregiving demands. Psychological capital can be conceptualized as a personal resource that enhances adaptive coping, while empathy represents an interpersonal capacity that shapes emotional engagement with care recipients (Duarte et al., 2016; Lutthans et al., 2007). Caregiver burden, in turn, reflects the subjective appraisal of caregiving demands and serves as a proximal predictor of burnout (Aghili et al., 2021; Jain, 2024). Examining caregiver burden as a mediating mechanism allows for a more nuanced understanding of how psychological capital and empathy jointly influence burnout outcomes.

Recent empirical advances further underscore the need for multivariate and structural approaches to studying caregiver well-being. Network and mediation analyses have revealed that psychological capital, empowerment, and empathy operate through complex pathways rather than simple direct effects (Wang et al., 2024; Xue et al., 2024). Longitudinal and mixed-method studies also emphasize the dynamic nature of caregiver experiences, suggesting that psychological resources and burden fluctuate over time in response to changing care demands (Guo & Shi, 2024; Yang et al., 2025). These findings point to the importance of testing theoretically grounded structural models that capture both direct and indirect relationships among key variables.

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Despite the growing literature, significant gaps remain. There is limited empirical evidence simultaneously examining psychological capital and empathy as predictors of burnout with caregiver burden as a mediator among professional caregivers in elderly care centers. Furthermore, few studies have employed structural equation modeling to test comprehensive models that integrate these constructs within a single analytic framework, particularly in non-Western contexts. Addressing these gaps is critical for informing evidence-based interventions aimed at reducing burnout, enhancing caregiver well-being, and ultimately improving the quality of care provided to older adults.

Therefore, the present study aims to examine a structural model predicting job burnout among caregivers in elderly care centers based on psychological capital and empathy, with the mediating role of caregiver burden.

2. Methods and Materials

2.1. Study Design and Participants

This study was correlational in design, and structural equation modeling (SEM) techniques were used for data analysis. The statistical population consisted of all caregivers employed in elderly care centers located in the city of Karaj in 2025 who had more than five months of experience in caring for older adults. Given the research objectives and executive limitations, a non-random, voluntary sampling method was employed. Due to adequate access to the target population, a relatively large sample size (N = 200) was selected to ensure greater precision in structural equation modeling analyses. In addition, according to Kline (2011), in structural equation modeling the sample size should be at least five to ten times the number of observed variables.

2.2. Measures

Maslach Burnout Inventory. The Maslach Burnout Inventory was developed by Maslach in 1985. This questionnaire is designed to provide a contemporary assessment of the phenomenon of stress or burnout. It consists of 22 items measuring emotional exhaustion, depersonalization, and reduced personal accomplishment within the context of professional activity and is particularly used to assess burnout in professional groups such as nurses, teachers, and similar occupations. The questionnaire includes three subscales: Emotional Exhaustion (items 1, 2, 3, 6, 8, 13, 14, 16, and 20), Depersonalization (items 5, 10, 11, 15, and 22), and Personal Accomplishment (items 4, 7, 9, 12, 17, 18, 19, and 21). Items are rated on a seven-point Likert scale ranging from 0 (never) to 6 (very much). Higher scores on emotional exhaustion and depersonalization indicate higher levels of burnout, whereas lower scores on personal accomplishment indicate reduced feelings of individual efficacy. To assess the reliability of this questionnaire, Maslach and Jackson (2006) used Cronbach's alpha and reported reliability coefficients of 0.92 for emotional exhaustion, 0.79 for depersonalization, and 0.71 for personal accomplishment, with an overall reliability of 0.81 for the total scale. The Maslach Burnout Inventory was first translated and validated in Iran by Filian (1992). In Iranian studies, Cronbach's alpha coefficients have been reported as follows: emotional exhaustion = 0.78, depersonalization = 0.55 to 0.87, personal accomplishment = 0.75 to 0.84, and overall reliability = 0.91 (Khaledi, 1996). These coefficients indicate the high reliability of the questionnaire in Iranian research and confirm its adequacy for accurately assessing burnout.

Psychological Capital Questionnaire. The Psychological Capital Questionnaire was developed by Luthans and colleagues in 2007 and is considered one of the valid instruments for assessing psychological capital in workplace settings. The questionnaire is grounded in positive psychology and consists of 24 items across four subscales: Hope (items 7–12), Resilience (items 13–18), Optimism (items 19–24), and Self-efficacy (items 1–6), with each subscale comprising six items. Responses are provided on a six-point Likert scale ranging from strongly disagree to strongly agree. To calculate psychological capital, scores for each subscale are first computed, and the total psychological capital score is obtained by summing the subscale scores. Higher scores indicate higher levels of psychological capital, whereas lower scores reflect weaknesses in these components. The Psychological Capital Questionnaire demonstrates high validity and reliability. In the original study, construct validity was examined using confirmatory factor analysis, and the results indicated that the four core components (hope, optimism, resilience, and self-efficacy) were significantly associated with the construct of psychological capital. Luthans (2007) reported a chi-square value of 24.6, with CFI and RMSEA indices of 0.97 and 0.08, respectively, supporting the factorial validity of the instrument. Reliability assessed via Cronbach's alpha yielded coefficients of 0.84 for hope, 0.79 for optimism, 0.76 for resilience, and 0.82 for self-efficacy. The psychometric properties of this questionnaire in Iran were examined by

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Mohsenabadi et al. (2021). The results of confirmatory factor analysis supported a hierarchical model in which four correlated factors were explained by a higher-order factor (psychological capital). In the study by Mohsenabadi et al. (2021), internal consistency coefficients ranged from 0.85 to 0.89 using Cronbach's alpha, and test–retest reliability over a four-week interval was also confirmed.

Empathy Quotient Questionnaire. This questionnaire, which is among the most widely used measures of empathy, was developed by Baron-Cohen in 2003. It consists of 26 items and is designed to assess empathy across multiple dimensions, including cognitive empathy, social skills, and emotional responsiveness. Items are rated on a five-point Likert scale ranging from never to always. Scoring for items 2, 5, 6, 8, 9, 11, 14, and 17 is reverse-coded. To obtain scores for each dimension, the items corresponding to that dimension are summed. Higher total scores indicate higher levels of empathy in respondents, and vice versa. In Baron-Cohen's study, the mean empathy score among healthy individuals was 42.1 with a standard deviation of 10.6. The reliability of the test was reported as 0.97, with a Cronbach's alpha of 0.92, indicating high validity and reliability. In a study by Abolghasemi (2009), the validity coefficient of this scale, based on correlations with an emotional intelligence scale and the DASS-21, was reported as 0.27 and −0.32, respectively. Test–retest reliability over a four-week interval yielded a coefficient of 0.80.

Caregiver Burden Questionnaire. This questionnaire was developed by Novak and Guest in 1989 to measure objective and subjective caregiver burden and consists of five subscales: Time Dependence (5 items), which reflects time constraints imposed on caregivers due to added caregiving responsibilities; Developmental Burden (5 items), which assesses whether caregivers feel delayed in personal development compared to their peers due to caregiving; Physical Burden (4 items), which describes caregivers' perceptions of physical threat or harm; Social Burden (5 items), which measures role conflict experienced by caregivers; and Emotional Burden (5 items), which evaluates negative feelings toward the care recipient. Responses are rated on a five-point Likert scale ranging from never (score of 1) to almost always (score of 5), and some items are reverse-scored due to their negative wording. Total scores range from 24 to 120, with higher scores indicating greater caregiver burden. According to a report by Abbasi et al. (2013), content validity indices of the Caregiver Burden Questionnaire were evaluated by ten faculty members in terms of relevance, clarity, and simplicity, yielding values of 91.8%, 90.2%, and 93.6%, respectively, with an overall content validity index of 91.86%. The overall reliability of the questionnaire was reported as 0.90 using Cronbach's alpha.

2.3. Data analysis

For statistical data analysis, structural equation modeling (SEM) was conducted using SPSS and AMOS software.

3. Findings and Results

In the present study, 254 caregivers from elderly care centers (209 women and 45 men) participated, with a mean age and standard deviation of 39.17 and 8.42 years, respectively. Regarding education, 74 participants (29.1%) had below a high school diploma, 143 (56.3%) held a high school diploma, 9 (3.6%) had an associate degree, and 28 (11.0%) held a bachelor's degree or higher. Among the participants, 53 (20.9%) were single and 186 (73.2%) were married. It should be noted that 15 participants (5.9%) were either divorced or widowed. Table 1 presents the means, standard deviations, and correlation coefficients among the study variables.

Table 1

Means, Standard Deviations, and Correlation Coefficients Among Study Variables

Var.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	—														
2	0.62**	—													
3	0.60**	0.54**	—												
4	0.55**	0.48**	0.59**	—											
5	0.27**	0.20**	0.27**	0.28**	—										
6	0.22**	0.18**	0.30**	0.23**	0.52**	—									
7	0.24**	0.29**	0.34**	0.31**	0.32**	0.43**	—								
8	−0.39**	−0.44**	−0.40**	−0.44**	−0.27**	−0.19**	−0.28**	—							
9	−0.37**	−0.39**	−0.34**	−0.42**	−0.25**	−0.21**	−0.35**	0.67**	—						
10	−0.46**	−0.49**	−0.41**	−0.49**	−0.28**	−0.23**	−0.33**	0.60**	0.63**	—					

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11	−0.41**	−0.42**	−0.45**	−0.49**	−0.33**	−0.17**	−0.30**	0.57**	0.52**	0.61**	—				
12	−0.42**	−0.47**	−0.39**	−0.46**	−0.29**	−0.24**	−0.36**	0.68**	0.66**	0.69**	0.58**	—			
13	−0.30**	−0.38**	−0.41**	−0.48**	−0.35**	−0.21**	−0.32**	0.43**	0.39**	0.37**	0.37**	0.43**	—		
14	−0.29**	−0.32**	−0.30**	−0.27**	−0.21**	−0.19**	−0.20**	0.31**	0.35**	0.41**	0.29**	0.39**	0.45**	—	
15	−0.36**	−0.34**	−0.35**	−0.42**	−0.27**	−0.09	−0.14*	0.40**	0.43**	0.38**	0.42**	0.45**	0.51**	0.39**	—
Mean	21.08	19.61	23.31	20.49	16.37	23.94	27.68	17.30	16.56	12.44	15.70	12.08	32.98	18.83	26.04
SD	4.13	3.20	3.42	3.31	3.41	4.95	6.05	3.93	3.74	3.67	3.61	3.82	6.64	4.38	6.71

*p<0.05; **p<0.01; 1. Psychological Capital – Self-efficacy; 2. Psychological Capital – Hope; 3. Psychological Capital – Resilience; 4. Psychological Capital – Optimism; 5. Empathy – Cognitive Empathy; 6. Empathy – Social Skills; 7. Empathy – Emotional Reactivity; 8. Caregiver Burden – Time Dependence; 9. Caregiver Burden – Developmental; 10. Caregiver Burden – Physical; 11. Caregiver Burden – Social; 12. Caregiver Burden – Emotional; 13. Burnout – Emotional Exhaustion; 14. Burnout – Depersonalization; 15. Burnout – Personal Accomplishment

Table 1 indicates that the correlation coefficients among variables were in the expected directions and consistent with the theoretical foundations of the research domain. In this study, to evaluate the assumption of univariate normality, skewness and kurtosis indices were examined, and to assess the assumption of multicollinearity, the variance inflation factor (VIF) and tolerance were evaluated. The results are presented in Table 2.

Table 2

Assessment of Normality and Multicollinearity Assumptions

Variable	Skewness	Kurtosis	Tolerance	VIF
Psychological Capital – Self-efficacy	0.83	−0.42	0.36	2.76
Psychological Capital – Hope	0.89	−0.10	0.37	2.69
Psychological Capital – Resilience	1.11	−0.23	0.34	2.92
Psychological Capital – Optimism	−0.04	0.12	0.43	2.33
Empathy – Cognitive Empathy	−0.83	0.26	0.67	1.51
Empathy – Social Skills	−0.07	−0.93	0.62	1.63
Empathy – Emotional Reactivity	−0.23	−0.95	0.63	1.58
Caregiver Burden – Time Dependence	−0.10	−0.81	0.42	2.36
Caregiver Burden – Developmental	−0.60	−0.34	0.43	2.34
Caregiver Burden – Physical	0.05	−0.59	0.29	3.42
Caregiver Burden – Social	−0.41	−0.83	0.47	2.15
Caregiver Burden – Emotional	−0.14	−0.58	0.24	4.18
Burnout – Emotional Exhaustion	−0.37	−0.10	—	—
Burnout – Depersonalization	−0.14	−0.92	—	—
Burnout – Personal Accomplishment	−0.17	−0.43	—	—

Consistent with the findings presented in Table 2, the skewness and kurtosis values of all variables fell within the ±2 range. This finding indicates that the assumption of univariate normality of the data distribution was satisfied (see Kline, 2016). Table 2 also shows that the assumption of absence of multicollinearity was met in the present data set, as the tolerance values of the predictor variables were greater than 0.10 and the variance inflation factor (VIF) values for all predictors were less than 10. According to Myers et al. (2006), tolerance values below 0.10 and VIF values above 10 indicate a violation of the multicollinearity assumption.

In the present study, to evaluate whether the assumption of multivariate normality was satisfied, the Mahalanobis distance statistics were examined. The skewness and kurtosis values of the Mahalanobis distance were 0.73 and 0.91, respectively, indicating that both indices were within the ±2 range; therefore, the assumption of multivariate normality was met. It should be noted that to assess the assumption of homogeneity of variances, scatterplots of standardized residual variances were examined, and the results indicated that this assumption was also satisfied.

After evaluating the assumptions, the data were analyzed using structural equation modeling. For this purpose, AMOS version 26.0 and the maximum likelihood estimation method were employed. In the proposed research model, it was hypothesized that psychological capital and empathy would predict job burnout among caregivers in elderly care centers through the mediating role of caregiver burden. As shown in Figure 1, self-efficacy, hope, resilience, and optimism served as indicators of the latent variable of psychological

capital; cognitive empathy, social skills, and emotional reactivity were indicators of the latent variable of empathy; time-dependent burden, developmental burden, physical burden, social burden, and emotional burden were indicators of the latent variable of caregiver burden; and emotional exhaustion, depersonalization, and personal accomplishment were indicators of the latent variable of job burnout. Table 3 presents the model fit indices.

Table 3

Model Fit Indices for the Research Model

Fit Index	Research Model	Cutoff Criterion
Chi-square (χ^2)	197.98	—
Degrees of freedom	84	—
χ^2/df	2.36	< 3
GFI	0.906	> 0.90
AGFI	0.865	> 0.85
CFI	0.942	> 0.90
RMSEA	0.073	< 0.08

Table 3 indicates that all fit indices supported an acceptable fit of the proposed model to the collected data. Table 4 presents the path coefficients of the structural model.

Table 4

Path Coefficients in the Structural Model

Type of Effect	Path	b	S.E.	β	p
Direct	Psychological Capital → Caregiver Burden	−0.484	0.076	−0.544	0.001
	Empathy → Caregiver Burden	−0.408	0.160	−0.228	0.005
	Caregiver Burden → Job Burnout	0.712	0.153	0.434	0.001
	Psychological Capital → Job Burnout	−0.404	0.145	−0.279	0.005
	Empathy → Job Burnout	−0.520	0.280	−0.178	0.067
Indirect	Psychological Capital → Job Burnout	−0.344	0.089	−0.238	0.001
	Empathy → Job Burnout	−0.290	0.131	−0.100	0.003
Total	Psychological Capital → Job Burnout	−0.748	0.139	−0.517	0.001
	Empathy → Job Burnout	−0.811	0.287	−0.278	0.001

As shown in Table 4, the total path coefficient (sum of direct and indirect effects) between psychological capital and job burnout ($\beta = -0.517$, $p = 0.001$) was negative and statistically significant. Similarly, the total path coefficient between empathy and job burnout ($\beta = -0.278$, $p = 0.001$) was negative and statistically significant. In line with the results presented in Table 4, the path coefficient between caregiver burden and job burnout ($\beta = 0.359$, $p = 0.001$) was positive and statistically significant. Table 4 further shows that the indirect path coefficient between psychological capital and job burnout ($\beta = -0.238$, $p = 0.010$), as well as the indirect path coefficient between empathy and job burnout ($\beta = -0.100$, $p = 0.003$), were negative and statistically significant. These findings indicate that caregiver burden significantly and negatively mediates the relationships of psychological capital and empathy with job burnout among caregivers in elderly care centers.

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Figure 1

Standardized Parameters of the Research Model

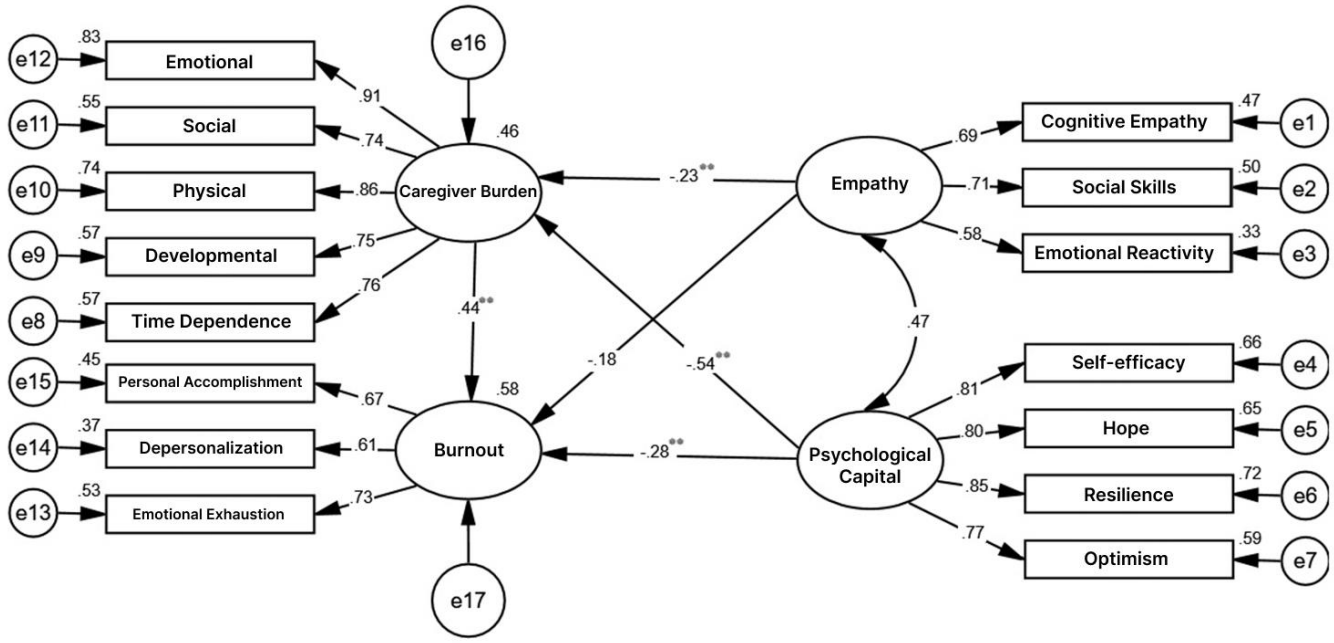

Figure 1 shows that the total squared multiple correlations for the latent variable of job burnout were 0.58. This finding indicates that psychological capital, empathy, and caregiver burden together explain 58% of the variance in job burnout among caregivers in elderly care centers.

4. Discussion

The present study examined a structural model in which psychological capital and empathy predicted job burnout among caregivers in elderly care centers, with caregiver burden functioning as a mediating variable. The findings provide strong empirical support for the proposed model and demonstrate that both psychological capital and empathy are significant protective factors against burnout, primarily through their impact on reducing caregiver burden. Overall, the model accounted for a substantial proportion of variance in job burnout, indicating that the interplay between internal psychological resources, interpersonal capacities, and caregiving-related stressors is central to understanding burnout in institutional elderly care settings.

The results showed that psychological capital had a significant negative direct effect on caregiver burden and job burnout. Caregivers with higher levels of self-efficacy, hope, resilience, and optimism experienced lower perceived caregiving burden and, consequently, lower burnout. This finding is consistent with the theoretical foundations of positive organizational psychology, which conceptualize psychological capital as a malleable resource that enhances individuals' ability to cope with stress and maintain well-being in demanding work environments (Lutthans et al., 2007). Empirical evidence from nursing and caregiving contexts similarly indicates that psychological capital is associated with lower emotional exhaustion, reduced depersonalization, and higher personal accomplishment (Mikaeili et al., 2023; Rezaei et al., 2021; Zhou et al., 2018). The present findings extend this body of literature by confirming that psychological capital is not only directly related to burnout but also indirectly influences burnout by alleviating caregiver burden.

The negative association between psychological capital and caregiver burden can be explained through several mechanisms. Caregivers with higher self-efficacy are more confident in managing complex care tasks and perceive caregiving challenges as manageable rather than overwhelming. Hope facilitates goal-oriented coping and helps caregivers sustain motivation despite chronic stressors. Resilience enables recovery from emotional setbacks, while optimism fosters positive expectations regarding caregiving outcomes. Together, these components reduce the subjective appraisal of caregiving demands as burdensome, which aligns with previous findings among caregivers of patients with chronic illnesses and older adults (Kiani et al., 2022; Kukihara et al., 2024; Liu et al., 2025). Studies conducted in elderly and nursing populations similarly report that psychological capital buffers the impact of workload and

emotional demands on burnout by strengthening adaptive coping strategies (Şenol Çelik et al., 2024; Yazdanparast et al., 2024).

Empathy also demonstrated a significant negative indirect effect on job burnout through caregiver burden, although its direct effect on burnout was weaker and not statistically significant when caregiver burden was included in the model. This pattern highlights the complex and context-dependent role of empathy in caregiving professions. On one hand, empathy facilitates understanding of older adults' emotional and psychological needs, promotes meaningful caregiver–resident relationships, and enhances the sense of purpose in caregiving roles (Duarte et al., 2016; Serrada-Tejeda et al., 2025). On the other hand, empathic engagement involves emotional investment, which may increase vulnerability to emotional exhaustion if caregivers lack sufficient psychological resources or organizational support (Shen et al., 2024; Yang et al., 2025). The present findings suggest that empathy contributes to lower burnout primarily by reducing perceived caregiver burden, rather than exerting a strong direct protective effect.

This mediating role of caregiver burden clarifies inconsistencies in previous research regarding empathy and burnout. Some studies have reported empathy as a protective factor against burnout, particularly depersonalization, by reinforcing humanistic values and emotional connection (Kharidaratiq & Zeynali, 2019; Zavar & Rezvani, 2018). Other studies, however, have highlighted the risk of compassion fatigue and emotional overload associated with high empathic engagement (Shen et al., 2024; Yang et al., 2025). The current results reconcile these perspectives by showing that empathy reduces burnout when it helps caregivers cognitively and emotionally process caregiving demands in a way that lowers perceived burden. When caregiver burden remains high, empathy alone may be insufficient to protect against burnout, underscoring the importance of mediating mechanisms.

Caregiver burden itself emerged as a strong positive predictor of job burnout, confirming its central role in the stress–burnout process. Higher levels of time-dependent, developmental, physical, social, and emotional burden were associated with higher burnout among caregivers. This finding is highly consistent with previous research demonstrating that caregiver burden is one of the most robust predictors of burnout, psychological distress, and reduced quality of life in both family and professional caregivers (Aghili et al., 2021; Chen et al., 2024; Jain, 2024). In elderly care centers, caregivers often face high patient dependency, staffing shortages, physical demands, and emotional exposure to residents' decline, all of which intensify burden and accelerate burnout (Abbasi Asl et al., 2025; Sun et al., 2024).

Importantly, the present study demonstrated that caregiver burden significantly mediated the relationships between psychological capital and burnout, as well as between empathy and burnout. This finding is theoretically and practically significant. It supports stress–process models suggesting that personal resources influence outcomes such as burnout indirectly by shaping individuals' appraisal of stressors and perceived burden. Similar mediating patterns have been reported in studies examining resilience, empowerment, and psychological capital among caregivers of older adults and patients with chronic conditions (Chen et al., 2024; Kukihara et al., 2024; Liu et al., 2025). The current results extend this evidence by integrating psychological capital and empathy within a single structural model, highlighting caregiver burden as a key mechanism linking these constructs to burnout.

From a cultural and contextual perspective, these findings are particularly relevant in settings where caregiving is socially valued but structurally under-resourced. In such contexts, including Iran and other collectivist societies, caregivers may experience high moral expectations alongside limited institutional support, increasing the risk of burden and burnout (Abbasi Asl et al., 2025; Bahari et al., 2017). Psychological capital and empathy may help caregivers navigate these challenges, but their protective effects appear to depend largely on their ability to reduce perceived burden. This underscores the need for organizational and systemic interventions that complement individual-level psychological resources.

The results also align with recent advances emphasizing the importance of multivariate and structural approaches to understanding caregiver well-being. Studies using mediation and network analyses have shown that psychological resources, empowerment, and emotional capacities operate through interconnected pathways rather than isolated direct effects (Wang et al., 2024; Xue et al., 2024). The present study contributes to this literature by empirically validating a comprehensive structural model that captures both direct and indirect effects among key psychological variables in elderly care settings.

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5. Conclusion

Overall, the findings suggest that interventions aimed at reducing caregiver burnout should not focus solely on symptom management but should also target underlying mechanisms such as caregiver burden by strengthening psychological capital and fostering adaptive empathic engagement. Enhancing caregivers' internal resources while simultaneously addressing the sources of burden may yield more sustainable improvements in caregiver well-being and care quality.

Despite its contributions, this study has several limitations that should be acknowledged. First, the cross-sectional design precludes causal inferences regarding the relationships among psychological capital, empathy, caregiver burden, and burnout. Second, the reliance on self-report measures may have introduced response biases, including social desirability and common method variance. Third, the sample was drawn from elderly care centers in a single geographic and cultural context, which may limit the generalizability of the findings to other regions or care settings. Finally, potential organizational variables such as staffing ratios, leadership style, and institutional support were not included in the model and may have influenced caregiver burden and burnout.

Future studies should employ longitudinal or experimental designs to examine causal pathways and changes in psychological capital, empathy, caregiver burden, and burnout over time. Expanding research to diverse cultural and organizational contexts would enhance the generalizability of findings and allow for cross-cultural comparisons. Future models could also integrate organizational and environmental factors, such as leadership, workload, and social support, to provide a more comprehensive understanding of caregiver burnout. Additionally, qualitative or mixed-method approaches may offer deeper insight into caregivers' lived experiences and the nuanced ways in which empathy and psychological capital interact with caregiving demands.

From a practical perspective, elderly care centers should prioritize the development of interventions that enhance caregivers' psychological capital, such as training programs focused on resilience, self-efficacy, and hope. Programs that promote balanced and regulated empathic engagement may help caregivers maintain emotional connection without becoming overwhelmed. Organizational strategies aimed at reducing caregiver burden, including adequate staffing, role clarity, and supportive supervision, are also essential. Integrating individual-level psychological interventions with organizational reforms may offer the most effective approach to reducing burnout and improving both caregiver well-being and the quality of care provided to older adults.

Authors' Contributions

S.S.M.M. conceptualized the study, developed the research model, and supervised the overall research process; N.S. was responsible for data collection, coordination with elderly care centers, and preliminary data preparation; N.B. conducted the statistical analyses using structural equation modeling, interpreted the results, and drafted the initial manuscript. All authors contributed to revising the manuscript critically, approved the final version for publication, and accept responsibility for the integrity and accuracy of the study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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